

1. What is the Principle of Isostasy? (5%)
2. Briefly describe the four kinds of plate margins. (10%)
3. Describe the principal horizons in the profile of a well-developed soil in an evergreen forest. (10%)
4. What are the difference between seismic body waves and surface waves? Identify two kinds of body waves and explain the difference. (10%)
5. How can magnetic polarity reversals be used to determine the timing of past geologic events? (10%)
6. The closure temperature for helium dating in apatite and zircon are 70°C , 200°C respectively. In an eroding landscape, suppose the helium age for zircon is 4.0 Myr. If the exhumation rate has been constant over time, what should the helium age for apatite be at the same location? (10%)
7. What primary factors influence shear stress and shear strength on hillslopes? (10%)
8. How do a stream's dimensions (depth, width) and velocity adjust in response to changes in discharge? (10%)
9. Illustrate how small-scale and large-scale erosional features can be used to infer the directions of flow of former glaciers. (10%)
10. How does wave refraction explain why rocky headlands are more vigorously eroded by surf than bays are? (5%)
11. In what ways can carbon be trapped on Earth and become part of the rock cycle? How can such carbon once again find its way into atmosphere? (10%)